TABLE OF CONTENTS

Number 1. January

Rapid Starch Synthesis Associated With Increased Respiration in Germinating Lily Pollen ..... DAVID B. DICKINSON 1–8

Regulation of Cold Hardiness in *Acer negundo*. R. M. IRVING AND F. O. LANPHEAR 9–13

Selenium Absorption by Excised *Astragalus* Roots. JANE M. ULRICH AND ALEX SHRIFT 14–20

Effect of the Specific Toxin in *Helminthosporium victoriae* on Host Cell Membranes. .....K. R. SAMADDAR AND R. P. SCHEFFER 21–28

Promotion of Growth and Invertase Activity by Gibberellic Acid in Developing *Avena* Internodes. PETER B. KAUFMAN, NAJATI GHOSHEH, AND HIROSHI IKUMA 29–34

Far-red Sensitive Dark Processes Essential for Light- and Gibberellin-induced Germination of Lettuce Seed. M. NEGBI, M. BLACK, AND J. D. BEWLEY 35–40

The Composition of Soluble Nucleotides in the Developing Wheat Grain. C. F. JENNER 41–49

Partial Chemical Characterization of Corn Root Cell Walls. JOHN E. DEVER, JR., ROBERT S. BANDURSKI, AND A. KIVILAAN 50–56

Lenthening Versus Shortening Dark Periods and Blossoming in Sugar Cane as Affected by Temperature. ..... HARRY F. CLEMENTS 57–60

Phosphorylation in Crested Wheatgrass Seeds at Low Water Potentials. A. M. WILSON AND G. A. HARRIS 61–65

Protochlorophyllide Resynthesis in Dark-Grown Bean Leaves. G. A. AKOYUNOGLOU AND H. W. SIEGELMAN 66–68

Studies on Auxin Protectors. IV. The Effect of Manganese on Auxin Protector-I of the Japanese Morning Glory. TOM STONIER, FELIX RODRIGUEZ-TORMES, AND YOSHIAKI YONEDA 69–72

Microbiology of Saturated Salt Solutions and Other Harsh Environments. IV. New Observations of Ribonucleotide-Induced Recovery of KCl-Habituated *Penicillium notatum*. S. M. SIEGEL AND KAREN ROBERTS 73–75

Mediation of a Plant Response to Malformin by Ethylene. ROY W. CURTIS 76–80

Tryptophan Biosynthesis in Cell Cultures of *Nicotiana tabacum*. DEBORAH P. DELMER AND S. E. MILLS 81–87

Stable Concentrations of Phytochrome in *Pisum* Under Continuous Illumination With Red Light. DAVID T. CLARKSON AND WILLIAM S. HILLMAN 88–92

Phytochemical Studies on the Tobacco Alkaloids. XII. Identification of γ-Methylaminobutyraldehyde and its Precursor Role in Nicotine Biosynthesis. SHIGENOBU MIZUSAKI, TAKURO KISAKI, AND EINOSUKE TAMAKI 93–98

Respiration of Oranges and Grapefruits Harvested at Different Stages of Development. ..... Y. AHARONI 99–102

Phosphorylases I and II of Maize Endosperm. C. Y. TSAI AND O. E. NELSON 103–112

Native Growth Inhibitors From Citrus Shoots. Partition, Bioassay, and Characterization. .....E. E. GOLDSCHMIDT AND S. P. MONSELISE 113–116

Phytochrome and Seed Germination. IV. Action of Light Sources With Different Spectral Energy Distribution on the Germination of Tomato Seeds. ..... ZOHARA YANIV AND ALBERTO L. MANCINELLI 117–120

Swelling and Contraction of *Phaseolus* Hypocotyl Mitochondria. M. J. Earnshaw and B. Truelove 121–129
Photosynthetic $^{14}CO_2$ Fixation by Green *Cymbidium* (Orchidaceae) Flowers. Jon Dueker and Joseph Arditti 130–132
Instructions for Contributors i
Symbols and Abbreviations iv
Author Index Cover III

Number 2. February

Effect of Ozone on Swelling of Tobacco Mitochondria. T. T. Lee 133–139
Studies on the Role of RNA Synthesis in Auxin Induction of Cell Enlargement. Larry D. Nooden 140–150
The Role of Light in Cold Acclimation of *Hedera helix* L. var. Thorndale. Peter L. Steponkus and F. O. Lanphear 151–156
Effect of Low-intensity Red and Far-red Light and High-intensity White Light on the Flowering Response of the Long-day Plant *Lemna gibba* G3. Charles F. Cleland and Winslow R. Briggs 157–162
Lipid Synthesis and Ultrastructure of Isolated Barley Chloroplasts. L. A. Appelqvist, P. K. Stumpf, and D. von Wettstein 163–187
Inhibition of the Formation of Photosynthetic Enzymes by Inhibitors of Photosynthesis. Daniel McMahon and Lawrence Bogorad 188–192
Photocontrol of *Spirodela intermedia* flavonoids. Jerry W. McClure 193–200
Fixation of Carbon Dioxide in the Dark by the Malic Enzyme of Bean and Oat Stem Rust Uredospores. P. D. Rick and C. J. Mirocha 201–207
Leaf Diffusion Resistance, Illuminance, and Transpiration. W. L. Ehrler and C. H. M. van Bavel 208–214
Morphogenic Responses of Debudded Tobacco Plants to Gibberellic Acid and Indole-3-Acetic Acid. John Skok 215–223
Metabolism of Sugars and Organic Acids in Immature Grape Berries. P. J. Hardy 224–228
Studies on the Ribonucleic Acid From Wheat Leaves and Chloroplasts. D. Hadziyev, S. L. Mehta, and Saul Zalik 229–237
Oxidized and Reduced Nicotinamide Adenine Dinucleotide Phosphate Levels of Plants Hardened and Unhardened Against Chilling Injury. Susumu Kuraishi, Noriko Arai, Tadahiro Ushijima, and Tadayoshi Tazaki 238–242
Influence of Substrate and Tissue Manganese on the IAA-Oxidase System in Cotton. D. M. Taylor, Page W. Morgan, Howard E. Joham, and J. V. Amin 243–247
Properties of Succinate Oxidation in Tomato Fruit Mitochondria. Robert E. Drury, John P. McCollum, and Stephen A. Garrison 248–254
The Effect Soaking Pea Seeds With or Without Seedcoats Has on Seedling Growth. L. A. Larson 255–259
Changes in Enzyme Levels During Germination of Seeds of *Triticum durum*. A. M. Firenzuoli, P. Vanni, G. Ramponi, and V. Baccari 260–264
Effect of Trifluralin on Growth, Morphology, and Nucleic Acid Synthesis. Donald P. Schultz, H. H. Funderburk, Jr., and N. S. Negi 265–273
Further Evidence of Oxygen Diffusion as the Determining Factor in the Relation Between Disk Thickness and Respiration of Potato Tissue. Ian R. MacDonald 274–280
Water Relations of Pine Seedlings in Relation to Root and Shoot Growth. Merrill R. Kaufmann 281–288
Glycolate Oxidase Activity in Algae. Israel Zelitch and P. R. Day 289–291
Author Index Cover III

Number 3. March

Growth Substances From *Veratrum tenuipetalum*. ..... H. Omar Olney 293–302
Laser-Activated Electron Transport in a *Chlamydomonas* Mutant. W. W. Hildreth 303–312
Gonadotropin Promotion of Adventitious Root Production on Cuttings of *Begonia semperflorens* and *Vitis vinifera*. Y. Leshem and B. Lunenfeld 313–317
Relationships Between the Development of Adventitious Roots and the Biosynthesis of Anthocyanins in First Internodes of *Sorghum*. Helen A. Stafford 318–326
Intermediate Reactions of Oxidative Phosphorylation in Mitochondria From Cabbage. ..... Prabhakar D. Lotlikar and LeMar F. Remmert 327–332
Gibberellin-like Activity in Berries of Seeded and Seedless Tokay Grapes. Shuichi Iwahori, Robert J. Weaver, and Robert M. Pool 333–337
Thresholds for Georesponse to Acceleration in Gravity-Compensated *Avena* Seedlings. .... J. Shen-Miller, R. Hinchman, and S. A. Gordon 338–344
Inhibition of Water Uptake in Sugar Beet Roots by Ammonia. Darrel M. Stuart and Jay L. Haddock 345–350
Interactions of Indoleacetic Acid and Gibberellic Acid in Leaf Abscission Control ..... Lowell N. Lewis and Jagdish C. Bakhshi 351–358
Protein Synthesis in Abscission: The Distinctiveness of the Abscission Zone and its Response to Gibberellic Acid and Indoleacetic Acid. Lowell N. Lewis and Jagdish C. Bakhshi 359–364
Sequential Induction of Phenylalanine Ammonia-lyase and a Lyase-inactivating System in Potato Tuber Disks. ..... Milton Zucker 365–374
Further Evidence for an Elongation-Decarboxylation Mechanism in the Biosynthesis of Paraffins in Leaves. ..... P. E. Kolattukudy 375–383
Relationship of Boron to Gibberellic Acid-Induced Proliferation in Debudded Tobacco Plants. ..... John Skok 384–388
Influence of Light Intensity at Different Temperatures on Rate of Respiration of Douglas-Fir Seedlings. ..... Holger Brix 389–393
Kinetics and Energetics of Light-enhanced Potassium Absorption by Corn Leaf Tissue. ..... D. W. Rains 394–400
Aspects of the Drought Tolerance in Creosotebush (*Larrea divaricata*). R. E. Saunier, H. M. Hull, and J. H. Ehrenreich 401–404
Template Requirement of Maize RNA Polymerase. Ernest R. Stout and Rusty J. Mans 405–410
Dimethyl Sulfoxide: Reversible Inhibitor of Pollen Tube Growth. David B. Dickinson and Donna Cochran 411–416
Regulation of Starch Biosynthesis in Plant Leaves: Activation and Inhibition of ADPglucose Pyrophosphorylase. Ghirdhar Gopal Sanwal, Elaine Greenberg, Jeanne Hardie, Erma C. Cameron, and Jack Preiss 417–427
Fatty Acid Composition in Tobacco I. Green Tobacco Plants. Hilda Chu and T. C. Tso 428–433
Changes in Sucrose Synthetase Activities in Aging Potato Tuber Slices. Nelly Lavintman and Carlos E. Cardini 434–436
A Press for Anaerobic Disintegration of Small Amounts of Tissue. W. Woodbury and M. A. Stahmann 437–438
Increased Root Initiation in Pinto Bean Hypocotyls With 2,4-Dinitrophenol. W. R. Krul 439–441
Ethylene Enhanced Release of α-Amylase From Barley Aleurone Cells. R. L. Jones 442–444
Ribosomal RNA Nucleotide Sequence Homologies in Plants. A. J. Trewavas and I. Gibson 445–447
Occurrence of Gibberellin A_8 in Parthenocarpic Apple Fruit. F. Hayashi, R. Naito, M. J. Bukovac, and H. M. Sell 448–450

Cytokinins in tRNA of *Corynebacterium fascians*.
SATOSHI MATSUBARA, DONALD J. ARMSTRONG, AND FOLKE SKOOG 451–453
Mechanism of Enhancement of IAA Oxidation by 2,4-Dichlorophenol.
L. RAYMOND FOX AND WILLIAM K. PURVES 454–456
On the Light Requirement for Betalain Biogenesis.
A. WOHLPART AND T. J. MABRY 457–459
Vein Loading and Transport in Detached Leaves.
O. A. LEONARD AND D. L. KING 460–463
Effect of Oxygen on the Rates of CO_2 Evolution in Light and in Darkness by Photosynthesizing and Non-Photosynthesizing Leaves.
C. S. HEW AND G. KROTKOV 464–466
Effects of Abscisin II on Phenylalanine Ammonia-Lyase Activity in Excised Bean Axes. ..... D. C. WALTON AND E. SONDHEIMER 467–469
Beta Gauging Leaf Water Status: Influence of Changing Leaf Characteristics. ..... H. J. MEDERSKI AND W. ALLES 470–472
Cellulose Synthesis in Higher Plants From UDP Glucose.
L. ORDIN AND M. A. HALL 473–476
Certain Effects of Benzimidazole on Young Tobacco Plants. JAMES J. DYAR 477–478
News and Notes i
Author Index ..... Cover III

Number 4. April

Decrease in Net Photosynthesis Caused by Respiration. BEN-AMI BRAVDO 479–483
Effect of Sterols on the Permeability of Alcohol-Treated Red Beet Tissue.
C. GRUNWALD 484–488
Phytochrome and Seed Germination. V. Changes of Phytochrome Content During the Germination of Cucumber Seeds.
ALBERTO L. MANCINELLI AND ABBY TOLKOWSKY 489–494
In vitro Protein Synthesis by Plastids of *Phaseolus vulgaris*. II. The Probable Relation Between Ribonuclease Insensitive Amino Acid Incorporation and the Presence of Intact Chloroplasts.
MAURICE M. MARGULIES, ELISABETH GANTT, AND FRANCESCO PARENTI 495–503
In vitro Protein Synthesis by Plastids of *Phaseolus vulgaris*. III. Formation of Lamellar and Soluble Chloroplast Protein.
MAURICE M. MARGULIES AND FRANCESCO PARENTI 504–514
Photosynthesis and Transpiration of Monterey Pine Seedlings as a Function of Soil Water Suction and Soil Temperature.
O. BABALOLA, L. BOERSMA, AND C. T. YOUNGBERG 515–521
Estimates of the Diffusion Resistance of Some Large Sunflower Leaves in the Field. ..... L. A. HUNT, IVAN I. IMPENS, AND E. R. LEMON 522–526
Manganese Absorption by Excised Barley Roots.
EUGENE V. MAAS, DAVID P. MOORE, AND BENJAMIN J. MASON 527–530
Release of Free Fatty Acids and Loss of Hill Activity by Aging Spinach Chloroplasts. GEORGE CONSTANTOPOULOS AND CHRISTINE N. KENYON 531–536
Physiological Studies on Pea Tendrils. V. Membrane Changes and Water Movement Associated With Contact Coiling.
M. J. JAFFE AND A. W. GALSTON 537–542
Metabolic Fate of 3,4-Dichloropropionanilide in Plants: The Metabolism of the Propionic Acid Moiety. ..... G. G. STILL 543–546
Studies of Sulfate Utilization by Algae. 4. Properties of a Cell-Free Sulfate-Reducing System From *Chlorella*.
JEROME A. SCHIFF AND MARK LEVINTHAL 547–554
Studies of Sulfate Utilization by Algae. 5. Identification of Thiosulfate as a Major Acid-Volatile Product Formed by a Cell-Free Sulfate-Reducing System From *Chlorella*.
MARK LEVINTHAL AND JEROME A. SCHIFF 555–562

Studies of Sulfate Utilization by Algae. 6. Adenosine-3′-Phosphate-5′-Phosphosulfate (PAPS) as an Intermediate in Thiosulfate Formation From Sulfate by Cell-Free Extracts of *Chlorella*.
ROBERT C. HODSON, JEROME A. SCHIFF, ANTHONY J. SCARSELLA, AND MARK LEVINTHAL 563–569
Studies of Sulfate Utilization by Algae. 7. *In vivo* Metabolism of Thiosulfate by *Chlorella*.
ROBERT C. HODSON, JEROME A. SCHIFF, AND ANTHONY J. SCARSELLA 570–577
Plant Leaf and Stem Proteins. I. Extraction and Electrophoretic Separation of the Basic, Water-Soluble Fraction.
B. H. MCCOWN, G. E. BECK, AND T. C. HALL 578–582
Transport of Rubidium Absorbed by the Apex of the Bean Root.
K. K. STEWARD AND H. V. KOONTZ 583–588
Transitory Aspects of a Single Protein in Tissues of *Solanum tuberosum* and Its Coincidence With the Establishment of New Growth.
C. A. RYAN, O. C. HUISMAN, AND R. W. VAN DENBURGH 589–596
Respiratory Electron Transport Systems of Aquatic Fungi. I. *Leptomitus lacteus* and *Apodachlya punctata*. ..... FRANK H. GLEASON 597–605
Studies on Electron-Transport Reactions of Photosynthesis in Plastome Mutants of *Oenothera*. .... DAVID C. FORK AND ULRICH W. HEBER 606–612
Endogenous Gibberellins of a Radiation Induced Single Gene Dwarf Mutant of Bean. ..... V. A. PROANO AND G. L. GREENE 613–618
Metabolism of α-Ketoglutarate by Roots of Woody Plants.
JOHN S. TITUS, WALTER E. SPLITTSTOESSER, AND PATRICIA SPENCER 619–621
An Electrophoretic Analysis of the Isozymes of Malate Dehydrogenase in Several Different Plants. ..... RALPH WEIMBERG 622–628
Extractable and Diffusible Gibberellins From Light- and Dark-grown Pea Seedlings. ..... R. L. JONES AND A. LANG 629–634
Respiratory Response of *Acer pseudoplatanus* Cells to Pyruvate and 2,4-Dinitrophenol. ..... CURTIS V. GIVAN AND JOHN G. TORREY 635–640
Inhibitory Effects of Dichlorophenoxyacetones on Auxin-induced Growth of *Avena* Coleoptile Sections.
ROBERT E. MASINGALE, JANET E. LEWIS, SARAH R. BRYANT, AND CHARLES G. SKINNER 641–644
Adenine Phosphoribosyltransferase in Plant Tissues: Some Effects of Kinetin on Enzymic Activity. P. B. NICHOLLS AND A. W. MURRAY 645–648
Evidence for the Participation of the Reductive Pentose Phosphate Cycle in Photoreduction and the Oxyhydrogen Reaction.
GEORGE K. RUSSELL AND MARTIN GIBBS 649–652
De Novo Synthesis of Isocitritase in Peanut (*Arachis hypogaea* L.) Cotyledons. ..... ANNA GIENTKA-RYCHTER AND JOE H. CHERRY 653–659
Evidence for *De Novo* Synthesis of Isocitratase and Malate Synthesis in Germinating Peanut Cotyledons. ..... CLAUDIO P. LONGO 660–664
Gas Chromatography of Carbohydrates in Alfalfa Nectar.
M. G. KLEINSCHMIDT, A. K. DOBRENZ, AND V. A. MCMAHON 665–667
Author Index ..... Cover III

Number 5. May

Effect of Fluoride on Nucleotides and Ribonucleic Acid in Germinating Corn Seedling Roots. ..... CHONG W. CHANG 669–674
Polar Movement of Indole-3-acetic Acid-^{14}C in Roots of *Lens* and *Phaseolus*.
SUSAN C. KIRK AND WILLIAM P. JACOBS 675–682
Studies on the Mode of Action of Tomatine as a Fungitoxic Agent.
P. A. ARNESON AND R. D. DURBIN 683–686
Metabolic Regulation in Diseased Leaves II. Changes in Nicotinamide Nucleotide Coenzymes in Barley Leaves Infected With Powdery Mildew. ..... I. J. RYRIE AND K. J. SCOTT 687–692

Light Sensitivity of Plastids and Plastid Pigments Present in the Albescent Maize Mutant.
CAROL SANDER, L. J. LABER, W. D. BELL, AND R. H. HAMILTON 693–697

Pulvini as the Photoreceptors in the Phytochrome Effect on Nyctinasty in *Albizzia julibrissin*.
WILLARD L. KOUKKARI AND WILLIAM S. HILLMAN 698–704

Characterization of Glyoxysomes From Castor Bean Endosperm.
R. W. BREIDENBACH, ALBERT KAHN, AND HARRY BEEVERS 705–713

Effects of Light on the Growth and Development of the Liverwort, *Sphaerocarpos donnellii* Aust. DAVID H. MILLER AND LEONARD MACHLIS 714–722

Light Mediated Changes in the Chloroplasts of the Liverwort, *Sphaerocarpos donnellii* Aust. ..... DAVID H. MILLER AND LEONARD MACHLIS 723–729

Pyruvate Kinase Activity of Wheat Plants Grown Under Potassium Deficient Conditions.
TATSUO SUGIYAMA, YOSHIAKI GOTO, AND TAKASHI AKAZAWA 730–734

Indoleacetic Acid and the Synthesis of Glucanases and Pectic Enzymes.
ANNE HARMON DATKO AND G. A. MACLACHLAN 735–742

Induction and Prevention of Chilling Injury to Radicle Tips of Imbibing Cottonseed. ..... M. N. CHRISTIANSEN 743–746

Interpretation of the Dual Isotherm for Ion Absorption in Beet Tissue.
C. B. OSMOND AND GEORGE G. LATIES 747–755

The Respiratory Chain Components of Higher Plant Mitochondria.
CLAUDE LANCE AND WALTER D. BONNER, JR. 756–766

In Vitro Phytochrome Dark Reversion Process. ..... A. O. TAYLOR 767–774

Evidence for a Role of Calcium in Nitrate Assimilation in Wheat Seedlings.
GARY M. PAULSEN AND JAMES E. HARPER 775–780

Light-Induced Chloroplast Shrinkage *in vivo* Detectable After Rapid Isolation of Chloroplasts From *Pisum sativum*. ..... PARK S. NOBEL 781–787

PEP Carboxykinase Exchange Reaction in Photosynthetic Bacteria.
T. G. COOPER AND C. R. BENEDICT 788–792

Role of Aldolase in Photosynthesis. II. Demonstration of Aldolase Types in Photosynthetic Organisms.
JAMES M. WILLARD AND MARTIN GIBBS 793–798

Immunochemical Study of Changes in Reserve Proteins of Germinating Soybean Seeds.
N. CATSIMPOOLAS, T. G. CAMPBELL, AND E. W. MEYER 799–805

Contents and Recovery of Gibberellins in Monoecious and Gynoecious Cucumber Plants.
DAN ATSMON, ANTON LANG, AND ELLIOT N. LIGHT 806–810

Uncoupling of Respiration-Linked Contraction in Corn Mitochondria.
J. B. HANSON, RAYMOND J. MILLER, AND S. W. DUMFORD 811–814

Fate of Radioactive Gibberellin A_1 in Maturing and Germinating Seeds of Peas and Japanese Morning Glory.
GERARD W. M. BARENDSE, HANS KENDE, AND ANTON LANG 815–822

Response of Tissue With Different Phytochrome Contents to Various Initial Photostationary States.
L. RAYMOND FOX AND WILLIAM S. HILLMAN 823–826

Studies on Cytokinin-Controlled Bud Formation in Moss Protonemata.
H. BRANDES AND H. KENDE 827–837

Vacuolar and Cytoplasmic Potassium Concentrations in Pea Roots in Relation to Cell-to-Medium Electrical Potentials. ..... B. ETHERTON 838–840

Effect of Cultivation Temperature on Peroxidase Isozymes of Plant Cells Grown in Suspension.
D. W. DE JONG, A. C. OLSON, K. M. HAWKER, AND E. F. JANSEN 841–844

Author Index ..... Cover III

Number 6. June

Seasonal Changes in the Distribution of Photo-assimilated ^{14}C in Young Pine Plants. ..... D. J. URSINO, C. D. NELSON, AND G. KROTKOV 845–852

Acetate Binding of Spinach Chloroplasts as a Facet of Fatty Acid Synthesis. K. A. DEVOR AND J. B. MUDD 853–858

Inhibitors from Carob (*Ceratonia siliqua* L.) I. Nature of the Interaction With Gibberellic Acid on Shoot Growth. MARY RITZEL CORCORAN AND CHARLES A. WEST 859–864

Distribution and Metabolism of Protein-Bound Hydroxyproline in an Elongating Tissue, the *Avena* Coleoptile. ..... ROBERT CLELAND 865–870

Physical Forces in Dormancy and Germination of *Xanthium* Seeds. Y. ESASHI AND A. C. LEOPOLD 871–876

Bidirectional Translocation of Sugars in Sieve Tubes of Squash Plants. P. TRIP AND P. R. GORHAM 877–882

Isolation of Active Mitochondria From Tomato Fruit. HAN SAN KU, HARLAN K. PRATT, ARTHUR R. SPURR, AND WILLIAM M. HARRIS 883–887

Electropotential in Excised Pea Epicotyls. A. E. S. MACKLON AND N. HIGINBOTHAM 888–892

Electrostatic Association and Donnan Phenomena as Mechanisms of Ion Accumulation. ..... A. J. HIATT 893–901

Effect of Temperature, CO_2 Concentration, and Light Intensity on Oxygen Inhibition of Photosynthesis in Wheat Leaves. P. A. JOLLIFFE AND E. B. TREGUNNA 902–906

A Detailed Evaluation of the Possible Contribution of Bacteria to Radioactive Precursor Incorporation Into Nucleic Acids of Plant Tissues. A. E. SOBOTA, C. J. LEAVER, AND JOE L. KEY 907–913

Changes in Cell Wall Polysaccharides Associated With Growth. DONALD J. NEVINS, PATRICIA D. ENGLISH, AND PETER ALBERSHEIM 914–922

Photorespiration and Glycolate Metabolism: A Re-examination and Correlation of Some Previous Studies. W. J. S. DOWNTON AND E. B. TREGUNNA 923–929

Some Characteristics of Nitrate Reductase From Higher Plants. L. E. SCHRADER, G. L. RITENOUR, G. L. EILRICH, AND R. H. HAGEMAN 930–940

Amino Acid Incorporation in Developing *Fucus* Embryos. D. M. PETERSON AND J. G. TORREY 941–947

Short-term Changes in Hexose Phosphates and ATP in Intact Cells of *Acer pseudoplatanus* L. Subjected to Anoxia. .... CURTIS V. GIVAN 948–952

Photomorphogenesis in *Sinningia speciosa*, cv. Queen Victoria I. Characterization of Phytochrome Control. RUTH L. SATTER AND DONALD F. WETHERELL 953–960

Photomorphogenesis in *Sinningia speciosa*, cv. Queen Victoria II. Stem Elongation: Interaction of a Phytochrome Controlled Process and a Red-requiring, Energy Dependent Reaction. RUTH L. SATTER AND D. F. WETHERELL 961–967

Internal Water Balance of Barley Under Soil Moisture Stress. AGUSTIN A. MILLAR, MURRAY E. DUYSEN, AND GUY E. WILKINSON 968–972

Effects of Changing Stomatal Width in A Red Pine Forest on Soil Water Content, Leaf Water Potential, Bole Diameter, and Growth. NEIL C. TURNER AND PAUL E. WAGGONER 973–978

Inositol Metabolism in Plants. V. Conversion of *Myo*-inositol to Uronic Acid and Pentose Units of Acidic Polysaccharides in Root-tips of *Zea mays* ..... R. M. ROBERTS, J. DESHUSSES, AND F. LOEWUS 979–989

Purification of Protochlorophyllide Holochrome. PETER SCHOPFER AND H. W. SIEGELMAN 990–996

The Non-essentiality of Boron for *Scenedesmus*. JOHN M. DEAR AND S. ARONOFF 997–998

Active Mitochondria Do Not Produce Ethylene.
HAN SAN KU AND HARLAN K. PRATT 999–1001
Wheat Seedling Growth in the Absence of Gravitational Force.
CHARLES J. LYON 1002–1007
Inhibition of *in vitro* DNA Synthesis by Auxins. SIGMUND SCHWIMMER 1008–1010
Author Index ..... Cover III

Number 7. July

Ribosomal RNA Synthesis in Newly Sliced Discs of Potato Tuber.
MICHAEL J. SAMPSON AND GEORGE G. LATIES 1011–1016
Mutual Diffusional Interference Between Adjacent Stomata of a Leaf.
G. D. COOK AND R. VISKANTA 1017–1022
Transport of 3-*o*-Methylglucose Into and Out of Storage Cells of *Daucus carota*. ..... LEONORA REINHOLD AND ZELIG ESHHAR 1023–1030
Lateral Movement of Auxin in Phototropism.
R. K. DELA FUENTE AND A. C. LEOPOLD 1031–1036
Peroxidases From the Extreme Dwarf Tomato Plant. Identification, Isolation, and Partial Purification. ..... JOHN J. EVANS 1037–1041
Measurement of Turgor Pressure and Its Gradient in the Phloem of Oak.
H. T. HAMMEL 1042–1048
Fluorescence Properties of Wild-Type *Chlamydomonas reinhardi* and Three Mutant Strains Having Impaired Photosynthesis.
JEAN LAVOREL AND R. P. LEVINE 1049–1055
Relationship of Water Potential to Growth of Leaves. .... JOHN S. BOYER 1056–1062
Some Properties of Potato Tuber UDPG:D-fructose-2-glucosyltransferase (E. C. 2.4.1.14) and UDPG:D-fructose-6-phosphate-2-glucosyltransferase (E. C. 2.4.1.13).
ESTANISLAVA SLABNIK, ROSALIA B. FRYDMAN, AND
CARLOS E. CARDINI 1063–1068
Ethylene Formation in Pea Seedlings: Its Relation to the Inhibition of Bud Growth Caused by Indole-3-Acetic Acid.
STANLEY P. BURG AND ELLEN A. BURG 1069–1074
Invertase Activity and Cell Growth in Lentil Epicotyls.
KONRAD SEITZ AND ANTON LANG 1075–1082
Proteolytic Activity in the Genus *Ficus*.
DONALD C. WILLIAMS, VALDEMIRO C. SGARBIERI, AND
JOHN R. WHITAKER 1083–1088
Cellular Senescence, Radiation Damage to Mitochondria, and the Compensatory Response in Ripening Pear Fruits.
ROGER J. ROMANI, IDA K. YU, LILY L. KU, L. KARL FISHER, AND
NANCY DEHGAN 1089–1096
Pathway of Uridine Diphosphate *N*-Acetyl-D-Glucosamine Biosynthesis in *Phaseolus aureus*. ..... F. C. MAYER, I. BIKEL, AND W. Z. HASSID 1097–1107
Characterization of Energy-Dependent Ca^{2+} Transport in Maize Mitochondria. ..... O. E. ELZAM AND T. K. HODGES 1108–1114
Effect of Substrate Salinity on the Ability for Protein Synthesis in Pea Roots. ..... I. KAHANE AND A. POLJAKOFF-MAYBER 1115–1119
L-Phenylalanine Ammonia-Lyase Activity During Germination of *Phaseolus vulgaris*. ..... DANIEL C. WALTON 1120–1124
Enzymes of Glyoxylate in Conifers.
A. M. FIRENZUOLI, P. VANNI, E. MASTRONUZZI, A. ZANOBINI, AND
V. BACCARI 1125–1128
Photorespiration in Green Plants During Photosynthesis Estimated by Use of Isotopic CO_2. ..... Y. SAMISH AND D. KOLLER 1129–1132
Inhibition of Apple Ripening by Succinic Acid, 2,2-Dimethyl Hydrazide and Its Reversal by Ethylene. ..... NORMAN E. LOGNEY 1133–1137
Effects of Salt Secretion on Psychrometric Determinations of Water Potential of Cotton Leaves. ..... BETTY KLEPPER AND H. D. BARRS 1138–1140

Studies on Auxin Protectors. V. On the Mechanism of IAA Protection by Protector-I of the Japanese Morning Glory.
TOM STONIER, YOSHIAKI YONEDA, AND FELIX RODRIGUEZ-TORMES 1141–1145
Protein Synthesis in Relation to Ripening of Pome Fruits.
CHAIM FRENKEL, ISAAC KLEIN, AND D. R. DILLEY 1146–1153
Metabolic Changes in Excised Fruit Tissue. IV. Changes Occurring in Discs of Apple Peel During the Development of the Respiration Climacteric.
A. C. HULME, M. J. C. RHODES, T. GALLIARD, AND L. S. C. WOOLTORTON 1154–1161
Biosynthesis of Cytidine Diphosphate Diglyceride by Cauliflower Mitochondria. S. SUMIDA AND J. B. MUDD 1162–1164
Is Riboflavin the Photoreceptor in the Induction of Two-dimensional Growth in Fern Gametophytes? BILL D. DAVIS 1165–1167
Author Index Cover III

Number 8. August

Growth Physics in *Nitella*: a Method for Continuous *in Vivo* Analysis of Extensibility Based on a Micro-manometer Technique for Turgor Pressure. PAUL B. GREEN 1169–1184
The Acetylene-Ethylene Assay for N_2 Fixation: Laboratory and Field Evaluation.
R. W. F. HARDY, R. D. HOLSTEN, E. K. JACKSON, AND R. C. BURNS 1185–1207
Role of Gibberellins in Stem Elongation and Flowering in Radish.
HIROSHI SUGE AND LAWRENCE RAPPAPORT 1208–1214
Carbon-14 Distribution in Carbohydrates of Immature *Zea mays*. Kernels Following $^{14}CO_2$ Treatment of Intact Plants. JACK C. SHANNON 1215–1220
Changes in Soluble RNA and Ribonuclease Activity During Germination of Wheat. BARBARA S. VOLD AND PAUL S. SYPHERD 1221–1226
Metabolism of Cytidine and Uridine in Bean Leaves.
CLEON ROSS AND C. V. COLE 1227–1231
Phospholipid Synthesis in Aging Potato Tuber Tissue.
WEN-JING TANG AND PAUL A. CASTELFRANCO 1232–1238
Some Properties of Phytochrome Isolated From Dark-grown Oat Seedlings (*Avena sativa* L.).
WINSLOW R. BRIGGS, WENDELL D. ZOLLINGER, AND BARBARA B. PLATZ 1239–1243
On the Significance of Cytokinin Incorporation Into RNA.
HANS KENDE AND JAMES E. TAVARES 1244–1248
Stimulation of Photoreactions of Isolated Chloroplasts by Serum Albumin.
MICHAEL FRIEDLANDER AND JOSEPH NEUMANN 1249–1254
Abscission: The Role of Ethylene, Ethylene Analogues, Carbon Dioxide, and Oxygen. F. B. ABELES AND H. E. GAHAGAN III 1255–1258
Kinetically Distinguishable Populations of Phytochrome.
WILLIAM K. PURVES AND WINSLOW R. BRIGGS 1259–1263
Properties of Ribulose-1,5-Diphosphate Carboxylase (Carboxydismutase) From Chinese Cabbage and Photosynthetic Microorganisms.
FRED J. KIERAS AND ROBERT HASELKORN 1264–1270
Effect of the Kinetin-Naphthaleneacetic Acid Interaction Upon Total RNA and Protein in Senescing Detached Leaves.
G. J. VONABRAMS AND HARLAN K. PRATT 1271–1278
Carotenes and Retinal in *Phycomyces* Mutants.
G. MEISSNER AND M. DELBRUCK 1279–1283
Isolation of Mutants of *Euglena gracilis* With Impaired Photosynthesis.
GEORGE K. RUSSELL AND HARVARD LYMAN 1284–1290
Mechanism of Selective Action of 3′,4′-Dichloropropionanilide.
ROY Y. YIH, D. HAROLD MCRAE, AND HAROLD F. WILSON 1291–1296
Levels of Phosphate Esters in *Spirodela*. R. L. BIELESKI 1297–1308

Effect of Phosphorus Deficiency on Levels of Phosphorus Compounds in *Spirodela*. ..... R. L. Bieleski 1309–1316
Light Induced Concentration Changes of ATP From *Phycomyces* Sporangiophores: A Re-examination.
W. Shropshire, Jr. and K. Bergman 1317–1318
The Response of Wild Type Male Gametes of Allomyces to Sirenin.
Leonard Machlis 1319–1320
Auxin Transport and Conjugation in Cotton Explants.
Betty J. Robinson, M. Forman, and F. T. Addicott 1321–1323
Author Index ..... Cover III

Number 9. September

Continuity of the Chloroplast Membrane Systems in *Zea mays* L.
Jaime Rosado-Alberio, T. Elliot Weier, and C. R. Stocking 1325–1331
Plant Nucleases. I. Separation and Purification of Two Ribonucleases and One Nuclease From Corn. ..... Curtis M. Wilson 1332–1338
Plant Nucleases. II. Properties of Corn Ribonucleases I and II and Corn Nuclease I. ..... Curtis M. Wilson 1339–1346
The Differentiation of Pigmentation in Flower Parts, IV. Flavonoid Elaborating Enzymes From Petals of *Impatiens balsamina*.
C. D. Miles and C. W. Hagen, Jr. 1347–1354
Ribonuclease Activity Associated With Ribosomes of *Zea mays*.
Theodore C. Hsiao 1355–1361
Calcium and Nodulation in Subterranean Clover (*Trifolium subterraneum* L.). ..... W. L. Lowther and J. F. Loneragan 1362–1366
Lipids in Grape Roots in Relation to Chloride Transport.
Pieter J. C. Kuiper 1367–1371
Ion Transport Characteristics of Grape Root Lipids in Relation to Chloride Transport. ..... Pieter J. C. Kuiper 1372–1374
Does Ethylene Mediate Root Growth Inhibition by Indole-3-Acetic Acid?
W. A. Andreae, M. A. Venis, F. Jursic, and T. Dumas 1375–1379
Translocation of Assimilates and Phosphate in Detached Bean Leaves.
O. A. Leonard and R. K. Glenn 1380–1388
Gas-Liquid Chromatography of Trimethylsilyl Derivatives of Abscisic Acid and Other Plant Hormones.
Larry A. Davis, D. E. Heinz, and F. T. Addicott 1389–1394
Oxido-Reduction States and Natural Homologue of Ubiquinone (Coenzyme Q) in Submitochondrial Particles From Etiolated Mung Bean (*Phaseolus aureus*) Seedlings.
Robert E. Beyer, Gerald A. Peters, and Hiroshi Ikuma 1395–1400
Uptake of Carrier-free ^{137}Cs by *Ramalina reticulata*.
Raymond Handley and Roy Overstreet 1401–1405
On Methods of Isolation of Active, Tightly Coupled Mitochondria of Wheat Seedlings. ..... Igor V. Sarkissian and Hari K. Srivastava 1406–1410
δ-Aminolevulinic Acid Transaminase in *Chlorella vulgaris*.
Merrill Gassman, Josip Pluscec, and Lawrence Bogorad 1411–1414
The Isolation of Spinach Chloroplasts in Pyrophosphate Media.
W. Cockburn, D. A. Walker, and C. W. Baldry 1415–1418
Photosynthesis by Isolated Chloroplasts, Simultaneous Measurement of Carbon Assimilation and Oxygen Evolution.
D. A. Walker, C. W. Baldry, and W. Cockburn 1419–1422
Species Specificity in the Biosynthesis of Branched Paraffins in Leaves.
P. E. Kolattukudy 1423–1429
Invertase Inhibitors From Red Beet, Sugar Beet, and Sweet Potato Roots.
Russell Pressey 1430–1434
Relationship Between Metabolism and the Lateral Transport of IAA in Corn Coleoptiles. .... Malcolm B. Wilkins and Pamela Whyte 1435–1442

Abscisic Acid Levels and Seed Dormancy.
E. Sondheimer, D. S. Tzou, and Eva C. Galson 1443–1447
Synthesis and Stability of Chloroplast Ribosomal—RNA's. ..... J. Ingle 1448–1454
Effect of 2,4-Dichlorophenoxyacetic Acid on the Cytokinin Requirement of Soybean Cotyledon and Tobacco Stem Pith Callus Tissues.
Francis H. Witham 1455–1457
An Electron Donor System For Nitrogenase-Dependent Acetylene Reduction by Extracts of Soybean Nodules.
Robert V. Klucas and Harold J. Evans 1458–1460
Cytochrome Oxidase of Cactus.
A. A. Khan, C. P. Tewari, P. S. Krishnan, and G. G. Sanwal 1461–1462
Inhibition of Gibberellic Acid-induced Germination by Abscisic Acid and Reversal by Cytokinins. ..... A. A. Khan 1463–1465
Tests Whether a Head to Head Condensation Mechanism Occurs in the Biosynthesis of *n*-Hentriacontane, the Paraffin of Spinach and Pea Leaves. ..... P. E. Kolattukudy 1466–1470
Author Index ..... Cover III

Number 9B. September

Environmental Factors in the Physiology of Abscission.
Fredrick T. Addicott 1471–1479
Hormonal Regulation of Leaf Abscission. ..... William P. Jacobs 1480–1495
Senescence Processes in Leaf Abscission.
R. K. dela Fuente and A. C. Leopold 1496–1502
Ethylene, Plant Senescence and Abscission. ..... Stanley P. Burg 1503–1511
Anatomical Aspects of Abscission. ..... Barbara D. Webster 1512–1544
Cell Wall Dissolution and Enzyme Secretion During Leaf Abscission.
D. James Morre 1545–1559
Control of Abscission in Agricultural Crops and Its Physiological Basis.
W. C. Cooper, G. K. Rasmussen, B. J. Rogers, P. C. Reece, and W. H. Henry 1560–1576
Role of RNA and Protein Synthesis in Abscission. ..... F. B. Abeles 1577–1586
Author Index ..... Cover III

Number 10. October

Changes in Enzymatic Activities in Etiolated Bean Seedling Leaves After a Brief Illumination ..... Barbara Filner and Attila O. Klein 1587–1596
Oxygen Evolution and the Permeability of the Outer Envelope of Isolated Whole Chloroplasts .... J. Michael Robinson and C. R. Stocking 1597–1604
Comparison of Upward and Downward Translocation of ^{14}C From a Single Leaf of Sunflower. ..... Michi Shiroya 1605–1610
Characteristics of a Virescent Cotton Mutant.
C. R. Benedict and R. J. Kohel 1611–1616
Seasonal Course of Photosynthesis, Respiration, and Distribution of ^{14}C in Young *Pinus resinosa* Trees as Related to Wood Formation.
John C. Gordon and Philip R. Larson 1617–1624
Hydroxyproline Formation and Its Relation to Auxin-induced Cell Elongation in the *Avena* Coleoptile. ..... Robert Cleland 1625–1630
Labeling Pattern of Translocated Stachyose in Squash. John E. Hendrix 1631–1636
Fat Metabolism in Higher Plants XXXVI: Long Chain Fatty Acid Synthesis in Germinating Peas.
Michael J. K. Macey and P. K. Stumpf 1637–1647
Rotational Streaming in Fiber Cells and Its Role in Translocation.
J. F. Worley 1648–1655

Effect of N-tris (Hydroxymethyl) Methylglycine and N-2-Hydroxyethylpiperazine-N′-2-Ethanesulfonic Acid Buffers on Linolenic Acid as a Substrate for Flaxseed Lipoxidase. ..... Don C. Zimmerman 1656–1660
A Study of Plastoquinones in Photochemical Reactions in the Chloroplasts of *Euglena gracilis* Strain Z. ..... S. B. Chang and T. S. Vedvick 1661–1665
Effect of Infection by *Hypomyces solani* f. sp. *Cucurbitae* on Apparent Free Space, Cell Membrane Permeability, and Respiration of Squash Hypocotyls. ..... Joseph G. Hancock 1666–1672
Biological Activity of a Phytotoxic Glycopeptide Produced by *Corynebacterium sepedonicum*. ..... Gary A. Strobel and W. M. Hess 1673–1688
The Effects of Ultraviolet Irradiation on a Coccoid Blue-Green Alga: Survival, Photosynthesis, and Photoreactivation. Chase Van Baalen 1689–1695
The Association of Carbohydrate Changes in the Shoot Tip of Cauliflower With Flowering. ..... Sidki Sadik and J. L. Ozbun 1696–1698
Stimulation of Indoleacetic Acid Oxidase and Inhibition of Catalase in Cotton Extracts by Plant Acids. ..... H. C. Lane and E. E. King 1699–1702
Biosynthesis of Insoluble Glucans From Uridine-Diphosphate-D-Glucose With Enzyme Preparations From *Phaseolus aureus* and *Lupinus albus*. H. M. Flowers, K. K. Batra, Jennifer Kemp, and W. Z. Hassid 1703–1709
Inositol Metabolism in Plants. VI. Conversion of *Myo*-Inositol to Phytic Acid in *Wolffiella floridana*. ..... R. M. Roberts and F. Loewus 1710–1716
Interactions Between Potassium and Calcium in Their Absorption by Intact Barley Plants. I. Effects of Potassium on Calcium Absorption. C. Johansen, D. G. Edwards, and J. F. Loneragan 1717–1721
Interaction Between Potassium and Calcium in Their Absorption by Intact Barley Plants. II. Effects of Calcium and Potassium Concentration on Potassium Absorption. C. Johansen, D. G. Edwards, and J. F. Loneragan 1722–1726
A Hexokinase-initiated Inhibition of Oxygen Uptake in Tomato Fruit Mitochondria Uncoupled by Dinitrophenol. Robert E. Drury and John P. McCollum 1727–1729
Invasion of Plant Tissue by Bacteria Under *In Vitro* Conditions. Egbert W. Henry, Jack G. Valdovinos, and Thomas E. Jensen 1730–1733
Increased DNA Template and RNA Polymerase Associated With the Breaking of Seed Dormancy. B. C. Jarvis, B. Frankland, and J. H. Cherry 1734–1736
Formation, Chromophore Composition, and Labeling Specificity of *Cyanidium caldarium* Phycocyanin. Robert F. Troxler and Roger Lester 1737–1739
Author Index ..... Cover III

Number 11. November

Determination of Root Exudates in a Steril Continuous Flow Culture. I. The Culture Method. Martin Richter, Werner Wilms, and Fritz Scheffer 1741–1746
Determination of Root Exudates in a Steril Continuous Flow Culture. II. Short-Term and Long-Term Variations of Exudation Intensity. Martin Richter, Werner Wilms, and Fritz Scheffer 1747–1754
Gibberellic Acid-Promoted Lignification and Phenylalanine Ammonia-lyase Activity in a Dwarf Pea (*Pisum sativum*). Christina K.-C. Cheng and H. V. Marsh, Jr. 1755–1759
Structural Physiological, and Biochemical Gradients in Tobacco Pith Tissue. S. Lavee and A. W. Galston 1760–1768
Developmental Physiology of Bean Leaf Plastids II. Negative Contrast Electron Microscopy of Tubular Membranes in Prolamellar Bodies. Albert Kahn 1769–1780

Developmental Physiology of Bean Leaf Plastids III. Tube Transformation and Protochlorophyll(ide) Photoconversion by a Flash Irradiation. ..... ALBERT KAHN 1781–1785
Second Positive Phototropism in the *Avena* Coleoptile. MARYLEE EVERETT AND KENNETH V. THIMANN 1786–1792
The Metabolism of ^{14}C-Labeled Isatin and Anthranilate in *Pisum* Stem Sections. ..... MILAN KUTACEK AND ARTHUR W. GALSTON 1793–1798
Differences in Photoresponse and Phytochrome Spectrophotometry Between Etiolated and De-etiolated Pea Stem Tissue. L. RAYMOND FOX AND WILLIAM S. HILLMAN 1799–1804
D-Glyceraldehyde 3-Phosphate Dehydrogenase of Higher Plants. MARVIN D. SCHULMAN AND MARTIN GIBBS 1805–1812
Comparative Studies of Enzymes Related to Serine Metabolism in Higher Plants. GEOFFREY P. CHEUNG, I. Y. ROSENBLUM, AND H. J. SALLACH 1813–1820
Biogenesis of Oxalate in Plant Tissues. CHI-CHENG CHANG AND HARRY BEEVERS 1821–1828
Investigation on Photorespiration With a Sensitive ^{14}C-Assay. ISRAEL ZELITCH 1829–1837
Variation in Photorespiration. The Effect of Genetic Differences in Photorespiration on Net Photosynthesis in Tobacco. ISRAEL ZELITCH AND P. R. DAY 1838–1844
Translocation of Sugar and Tritiated Water in Squash Plants. P. TRIP AND P. R. GORHAM 1845–1849
The Effect of Light and Inhibitors on Chloroplast and Cytoplasmic RNA Synthesis. ..... J. INGLE 1850–1854
Control of Senescence in *Rumex* Leaf Discs by Gibberellic Acid. JONATHAN J. GOLDTHWAITE AND W. M. LAETSCH 1855–1858
Synthesis of Chymotrypsin Inhibitor I Protein in Potato Leaflets Induced by Detachment. ..... C. A. RYAN 1859–1865
Dormancy, Turion Formation, and Germination by Different Clones of *Spirodela polyrrhiza*. ..... THOMAS O. PERRY 1866–1869
Sap Tension in Flooded Trees and Bushes of the Amazon. P. F. SCHOLANDER AND M. DE OLIVEIRA PEREZ 1870–1873
Ribosome Particles in Corn Mitochondria. R. H. WILSON, J. B. HANSON, AND H. H. MOLLENHAUER 1874–1877
Isolation of Plant Cuticles With Zinc Chloride-hydrochloric Acid Solution. P. J. HOLLOWAY AND E. A. BAKER 1878–1879
An Inducible Protein in Potato and Tomato Leaflets. ..... C. A. RYAN 1880–1881
Author Index ..... Cover III

Number 12. December

The Circadian Rhythm of Leaf Movement of *Coleus blumei* x *C. frederici*, a Short Day Plant. I. Under Constant Light Conditions. RUTH HALABAN 1883–1886
The Circadian Rhythm of Leaf Movement of *Coleus blumei* x *C. frederici*, a Short Day Plant. II. The Effects of Light and Temperature Signals. ..... RUTH HALABAN 1887–1893
The Flowering Response of *Coleus* in Relation to Photoperiod and the Circadian Rhythm of Leaf Movement ..... RUTH HALABAN 1894–1898
Enzymic Mechanism of Starch Breakdown in Germinating Rice Seeds I. An Analytical Study. TAKAO MURATA, T. AKAZAWA, AND SHIKIKO FUKUCHI 1899–1905
Purification and Some Properties of the Nitrogenase From Soybean (*Glycine max* Merr.) Nodules. ROBERT V. KLUCAS, BURTON KOCH, STERLING A. RUSSELL, AND HAROLD J. EVANS 1906–1912
Relation Between Simultaneous Ca and Sr Transport Rates in Isolated Segments of Vetch, Barley, and Pine Roots. MAXINE E. HUTCHIN AND BURTON E. VAUGHAN 1913–1918
CO_2 Metabolism in Corn Roots. III. Inhibition of P-enolpyruvate Carboxylase by L-malate. ..... IRWIN P. TING 1919–1924

Atrazine Metabolism in Resistant Corn and Sorghum.
R. H. SHIMABUKURO 1925–1930
Diurnal Pattern of Water Potential in Woody Plants. .... BETTY KLEPPER 1931–1934
Comparative Studies on Plastoquinones. IV. Plastoquinones in Algae.
ELENA SUN, RITA BARR, AND F. L. CRANE 1935–1940
Effects of Potassium Nutrition on Ribonucleic Acid and Ribonuclease Acid and Ribonuclease in *Zea mays* L.
THEODORE C. HSIAO, R. H. HAGEMAN, AND E. H. TYNER 1941–1946
Stomatal Opening in Isolated Epidermal Strips of *Vicia faba*. I. Response to Light and to CO_2-free Air. ..... R. A. FISCHER 1947–1952
Stomatal Opening in Isolated Epidermal Strips of *Vicia faba*. II. Responses to KCl Concentration and the Role of Potassium Absorption.
R. A. FISCHER AND THEODORE C. HSIAO 1953–1958
The Biogenesis of Ethylene in *Penicillium digitatum*.
DONALD W. JACOBSEN AND CHIH H. WANG 1959–1966
Studies on a Maize Mutant Sensitive to Low Temperature I. Influence of Temperature and Light on the Production of Chloroplast Pigments.
ADELE MILLERD AND J. R. MCWILLIAM 1967–1972
The Auxin Induced Curvature of Citrus Petals.
ELIEZER E. GOLDSCHMIDT 1973–1977
Photoreduction and Photophosphorylation with Tris-Washed Chloroplasts.
TAKASHI YAMASHITA AND WARREN L. BUTLER 1978–1986
The Induction of Biplanar Growth in Fern Gametophytes in the Presence of RNA Base Analogues. ..... R. G. BURNS AND J. INGLE 1987–1990
Photosynthetic Enhancement in the Diatom *Phaeodactylum tricornutum*.
JAMES E. MANN AND JACK MYERS 1991–1995
Oxidative and Phosphorylative Activities of Mitochondria Isolated From Cotton Hypocotyls.
D. D. KILLION, SHIRLEY GROOMS, AND R. E. FRANS 1996–2000
Studies on Ultrastructure and Purification of Isolated Plant Mitochondria.
JAMES E. BAKER, LARS-G. ELFVIN, JACOB B. BIALE, AND S. I. HONDA 2001–2022
Opposing Actions of Light in Seed Germination of *Poa pratensis* and *Amaranthus arenicola*.
S. B. HENDRICKS, V. K. TOOLE, AND H. A. BORTHWICK 2023–2028
Effects of Kinetin, IAA, and Gibberellin on Ethylene Production, and Their Interactions in Growth of Seedlings.
YORAM FUCHS AND MORRIS LIEBERMAN 2029–2036
Inhibition of Chloroplasts by UV-Irradiation and Heat-Treatment.
TAKASHI YAMASHITA AND WARREN L. BUTLER 2037–2040
ATP Sulfurylase Activity in the Soybean [*Glycine max* (L.) Merr.]
C. A. ADAMS AND R. E. JOHNSON 2041–2044
Transport of the Auxin, Picloram, Through Petioles of Bean and *Coleus* and Stem Sections of Pea. ..... R. F. HORTON AND R. A. FLETCHER 2045–2048
Gibberellin-like Substances From Vegetative Tissue of a Conifer, Arizona Cypress. ..... M. RUDDAT, R. P. PHARIS, H. AOKI, AND A. CROZIER 2049–2053
Uptake of ^{86}Rb and K by Excised Maize Roots.
E. V. MAAS AND J. E. LEGGETT 2054–2056
Freeze-Preservation of Cultured Flax Cells Utilizing Dimethyl Sulfoxide.
RALPH S. QUATRANO 2057–2061
Structure of Microbodies in Abscission Cells.
THOMAS E. JENSEN AND JACK G. VALDOVINOS 2062–2065
Effects of Storage and Aging on Properties of Phosphofructokinase From Jerusalem Artichoke Tubers.
M. KAY BLACK AND RANDOLPH T. WEDDING 2066–2069
Substances Essential for a Red, Far-Red Light Reversible Attachment of Mung Bean Root Tips to Glass. ..... T. TANADA 2070–2071
Title Page i
Table of Contents, Annual ..... iii-xvi
Author Index, Volume 43 ..... xvii-xxv
Subject Index, Volume 43 ..... xxvi-xliv
Author Index ..... Cover III